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HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
OLSEN, LIN B	
ART UNIT	PAPER NUMBER
3661	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
jessica.l.fusek@hp.com

Office Action Summary	Application No.	Applicant(s)
	10/789,669	JOUPPI, NORMAN PAUL
	Examiner	Art Unit
	LIN B. OLSEN	3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18-22 and 24-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16,18-22 and 24-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

After the communication of January 9, 2009, claims 1-16, 18-22 and 24-31 are pending in the present application. Claims 1, 7, 13 and 19 are independent claims.

The objections to claims 3, 13, 15, 28 and 30 have been withdrawn.

The rejection of claims 26 and 27 under USC 112 1st paragraph has been withdrawn.

Response to Arguments

Applicant's arguments filed January 9, 2009 have been fully considered but they are not persuasive. The '161 reference discloses a mobile robot operating under control of a wireless connection. Paragraph 9 starts the discussion of the robot's operating flow chart, by stating that the robot includes a wireless (electric wave) judging section that is always monitoring the wireless connection. In addition, the robot records the joint wireless condition/position information at set time intervals in a memory. Position is recorded as travel distance (migration) and direction in the time interval. While the wireless condition is good (which reference to Figure 5 indicates is quantified rather than a go/no-go condition) the robot follows its directions and may end its travel successfully.

Paragraph 10 describes what happens when the wireless condition deteriorates (get worse). Even while the wireless condition is deteriorated, the wireless judging section is monitoring the wireless connection; hence it is continually receiving wireless communications. On detecting deteriorated condition, the robot stops while still monitoring the wireless connection, calculates or retrieves from memory the distance

and direction to a former location (front) and has a pattern creation section determine the path to follow to reach a position having good communications. For Instance, the pattern creation section may have the robot backtrack, undoing its most recent movement. When the robot completes the pattern, it rechecks the wireless condition.

The rejection of the claims is sustained, but a new reference that better illustrates prior art human perceptible indicators has been substituted for Gordon.

Claim Objections

Claim 27 is objected to because of the following informalities: It is suggested that “the desired rate” be replaced with “the desired data rate” to utilize proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims **7-9, 11, 28 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent application 2003-052161 as described in Patent Abstracts of Japan 2004-260769, the machine translation of application previously provided and a second machine translation with slightly better phraseology. (‘161), in view of “The Ominous Mail Delivery Robot” http://everyting2.com/title/The+Ominous+Mail+Delivery+Robot (Mail), ‘161 is concerned with preventing a mobile robot from becoming inoperable due to loss of radio signals.

Mail describes an autonomous mail delivery robot that continually indicates its presence.

Regarding independent **claim 7**, “A method of mobile telepresencing comprising:” - The recitation of telepresencing in claim 7 has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self contained description of the structure not depending for completeness upon the introductory clause. Kropa v. Robie, 88 USPQ 478 (CCPA 1951).

“moving a surrogate under real-time wireless control by a user;” - in ‘161 Abstract, Solution, lines 3-4, states that a mobile robot is remotely operated by a user.

“autonomously moving the surrogate to an area with adequate wireless coverage to regain wireless control when the wireless control is lost for a period of time; and” - in ‘161 translation paragraph 5, the mobile device monitors the condition of the wireless signal always and the readings are stored in a map. (Step S3, described in Paragraph 9). In paragraph 10, the robot detects the weakening of the signal and while continuing to monitor the signal it autonomously moves to return to a location where the wireless signal is acceptable. While Paragraph 10 discusses a weakening of the signal, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the same procedure for a lost signal as a weakened one.

“while the surrogate is autonomously moving, activating a human perceptible indicator which is perceptible to humans in the presence of the surrogate.” ‘161 does

not address human perceptible indicators while the robot is moving autonomously. However, Mail refers to an early mail delivery robot that continually made a sound to warn humans that it was nearby and a different sound to notify them of a mail pick-up. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the known technique of warning humans when a robot was moving autonomously to the moving Robot of ‘161 to improve a similar device in a known way with a predictable result.

Regarding **claim 8,** which is dependent on claim 7, additionally comprising:

autonomously moving the surrogate along a previously determined route. – ‘161 paragraph 10 describes a pattern of operation that is executed autonomously.

Regarding **claim 9,** which is dependent on claim 7, wherein:

“losing wireless control includes degradation of the control to a threshold level; - ‘161 in paragraph 9 states that the mobile robot is always monitoring the electric wave intensity and recording the intensity in the map. Such measuring would naturally be against a threshold.

“autonomously moving the surrogate to regain wireless control occurs after a period of time.” In '161 paragraph 10, the robot stops after detecting the bad connection, and thereafter moves to where it expects to find a better connection.

Regarding **claim 11** which is dependent on claim 7 wherein:

"moving the surrogate under wireless control includes logging forward motion using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof." – '161 does not discuss how the mobile robot measures distances but in paragraph 8, it records that the "mobile robot memorizes moving trucking information" while recognizing the location based on the distance measured by the initial value position and a sensor.

Regarding **claim 31**, which is dependent on claim 7, wherein "the surrogate comprises the human perceptible indicator." – As indicated in Mail, the mail delivery robot emitted a specific sound while moving autonomously, hence it (or its speaker) was the human perceptible indicator.

Claims **10, 12, and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over '161/ Mail as applied to claims 7, above, and further in view of A. Stentz, C.Dima, C Wellington, H. Herman and D. Stager "A System for Semi-Autonomous Tractor operations" (Stentz). Stentz is concerned with a tractor operation that is intermittently in wireless control by a user and executes autonomously when possible.

Regarding **claims 10, and 28**, which are dependent on claims 7 and 10 respectively wherein:

"autonomously moving the surrogate includes:

backtracking means for measuring distance and avoiding collisions by the surrogate;

stopping the surrogate for an obstacle; and

automatically without user intervention resuming backtracking after removal of the obstacle." "161/Mail do not address avoiding obstacles while moving autonomously, but Stentz teaches using a semi-autonomous tractor for a manned tractor and measuring distance by wheel rotations. When the tractor moving autonomously detects an obstacle, it stops (p. 90. paragraph under Fig. 2). Subsequently, when the obstacle is removed or it is determined that the tractor has misidentified the obstacle, it resumes travel. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Stentz's response to an obstacle in the response mechanism of '161 to detecting poor communications since stopping for an obstacle on the ground is a safety response and applying a known technique to improve the safety of a mobile device is an improvement on the device.

Regarding **claim 12**, which is dependent on claim 7 wherein:

"autonomously moving the surrogate to backtrack uses logged information of forward movement using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof;

autonomously moving the surrogate to backtrack uses a slower speed than forward speed; and

autonomously moving the surrogate uses waypoints back along a forward movement path for backtracking movement considering the slower speed of backtracking." - ‘161/Mail/Stentz disclose the invention except for using a slower speed when backtracking. It would have been obvious to one having ordinary skill in the art at the time of the invention to travel slower when maneuvering autonomously rather than under remote control because of the extra computation. Further, the condition of assuring that any humans near the device not be harmed implies slower motion. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claims **1-3, 5-6, 13-15, 18-21 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent application 2003-052161 as described in Patent Abstracts of Japan 2004-260769, the machine translation of application previously provided and a second machine translation with slightly better phraseology. (‘161). ‘161 is concerned with preventing a mobile robot from becoming inoperable due to loss of radio signals.

Regarding independent **claim 1**, "A method of mobile device control comprising:

moving a surrogate under wireless control by a user;" – in ‘161 Abstract, Solution, lines 3-4, states that a mobile robot is remotely operated by a user.

"during the moving, detecting unsuitable degradation of wireless communications of the wireless control; and – in ‘161 translation paragraph 5, the mobile device monitors

the condition of the wireless signal always and the readings are stored in a map. (Step S3, described in Paragraph 9). In paragraph 10, the robot detects the weakening of the signal.

“in response to the detecting and while the surrogate is still receiving the wireless communications, autonomously moving the surrogate to provide suitable wireless communications of the wireless control.” – in ‘161 paragraph 10, detecting that the radio wave is worse, continuing to monitor the signal and autonomously moving to return to a location where the wireless signal is acceptable.

Regarding independent **claim 13,** “A mobile device control system comprising: a surrogate movable under wireless control by a user; and” - in ‘161 Abstract, Solution, lines 3-4, a mobile robot is remotely operated by a user.

“a computer/transceiver system on the surrogate for detecting loss of the wireless control, configuring the surrogate to loiter for a non-zero amount of time following the loss of the wireless control near a location at which the loss of the wireless control was detected, monitoring for return of the wireless control during the non-zero amount of time, and moving the surrogate to regain wireless control independently of the wireless control after passage of the non-zero amount of time following the loss of the wireless control.” - In ‘161, Fig. 2, as described in paragraph 7, the mobile robot is shown having a computer and transceiver to control and carry on communications. In ‘161 translation paragraph 8, the mobile device monitors the condition of the wireless signal always and judges its strength. When the robot detects

loss of signal (electric wave not reach), it has the capability to plan a path to a good signal. The flow chart of Figure 4, as described in paragraphs 9 and 10, speaks of stopping at the weak or dead spot, (always monitoring the signal) and then planning and executing a path to a good signal. The Examiner takes note of the fact that loiter is broad enough to encompass both stationary waiting and waiting while in motion.

Regarding independent **claim 19**, “A mobile telepresencing system comprising:” - The limiter “telepresencing” is not given a patentable weight for the same reasons given with respect to claim 7.

“a surrogate movable under wireless control by a user; and” - in ‘161 Abstract, Solution, lines 3-4, a mobile robot is remotely operated by a user.

a computer/transceiver system for determining when the wireless control is lost and responsive to the determining, autonomously moving the surrogate to an area not currently receiving adequate coverage of the wireless control, but in which the surrogate previously experienced adequate coverage of the wireless control, to regain adequate coverage of the wireless control, and loitering in the area for the wireless control to return. - In ‘161, Fig. 2, as described in paragraph 7, the mobile robot is shown having a computer and transceiver to control and carry on communications. In ‘161 translation paragraph 8, the mobile device monitors the condition of the wireless signal always and judges its strength. When the robot detects loss of signal (electric wave not reach), it has the capability to plan a path to where it expects a good signal. The flow chart of Figure 4, as described in paragraphs 9 and 10, describes what the robot does when it

detects a weak signal (The Examiner notes that no signal is a very weak signal). The robot stops at the spot; consults the signal/position map that it has been creating; calculates a path to a position where there was a good signal previously, and executes the path. When it arrives at the position and there is a signal, the robot reconnects with the user. However, if there is no signal at the position, the robot re-executes the action at weak signal routine including stopping at the position and monitoring the signal strength. The ‘161 robot, like applicant’s, aims at a location where it received a good signal previously, neither knows that there is no signal there until they arrive. The Examiner takes note of the fact that loiter is broad enough to encompass both stationary waiting and waiting while in motion.

Regarding **claims 2, 14, 20**, which are dependent on claims 1, 13 and 19 respectively, additionally comprising:

autonomously moving the surrogate along a previously determined route. – ‘161 paragraph 10 describes a pattern of operation that is executed autonomously.

Regarding claims **3, 15, 21 and 30**, which are dependent on claims 1, 13, and 19 respectively, wherein:

“autonomously moving the surrogate to provide suitable wireless communications of the wireless control occurs after passage of a period of time following the detecting of the degradation; and

"the method further comprises after the detecting of the unsuitable degradation, the surrogate loitering near a location where the unsuitable degradation was detected during the passage of the period of time." – In paragraph 7 of '161, the robot is always measuring the signal strength. After detecting a weak or no signal, the robot stops, a form of loitering, for a time. The robot uses this time to determine where to go to find good reception.

Regarding **claim 5** which is dependent on claim 1 wherein:

"moving the surrogate under wireless control includes logging forward motion using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof." – '161 does not discuss how the mobile robot measures distances but in paragraph 8, it records that the "mobile robot memorizes moving trucking information" while recognizing the location based on the distance measured by the initial value position and a sensor.

Regarding **claims 6 and 18** which are dependent on claims 1 and 13 wherein:

"autonomously moving the surrogate uses logged information of forward movement using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or combination thereof; and

autonomously moving the surrogate uses waypoints back along a forward movement path for backtracking movement." – '161 reports recording radio wave strength in a map as the mobile robot is moving. In paragraph 11 the robot uses the

map information to identify landmarks and deduces the direction and distance to a target position.

Claims **4, 16, 22, 24-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘161 as applied to claims 1, 13 , and 19 above, and further in view of A. Stentz, C.Dima, C Wellington, H. Herman and D. Stager “A System for Semi-Autonomous Tractor operations” (Stentz). Stentz is concerned with a tractor operation that is intermittently in wireless control by a user and executes autonomously when possible.

Regarding **claim 25**, which is dependent on claim 1 wherein:

“the detecting comprises comparing a performance parameter associated with the wireless communications with a threshold.” - ‘161 in paragraph 9 states that the mobile robot is always monitoring the electric wave intensity and recording the intensity in the map. Such measuring would naturally be against a threshold.

Regarding **claims 4 and 16**, which are dependent on claim 1 and 13 respectively, wherein:

“autonomously moving the surrogate includes measuring distance and” – in ‘161 paragraph 10, in describing the robot moving through a pattern of operation, the patent describes the robot moving 50cm ahead, which shows that the robot is measuring a distance as it is moving autonomously.

"avoiding collisions by the surrogate." – "161 does not mention obstacles. However, Stentz specifically detects obstacles (see section 5 on page 97). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the known techniques of obstacle detection as discussed in Stentz to improve the robot of '161 so that obstacles would not stop it from completing a task.

Regarding **claims 22**, which are dependent on claims 19 and respectively wherein:

"The computer/transceiver system for autonomously moving the surrogate includes:

backtracking means for measuring distance and avoiding collisions by the surrogate during backtracking; -

stopping means for stopping the surrogate for a chosen obstacle; and

means for automatically without user intervention resuming backtracking after removal of the obstacle." "161 does not address dealing with obstacles in the robot's path, but Stentz teaches using a semi-autonomous tractor for a manned tractor and measuring distance by wheel rotations. When the tractor moving autonomously detects an obstacle, it stops (p. 90. paragraph under Fig. 2). Subsequently, when the obstacle is removed or it determined that the tractor has misidentified the obstacle, it resumes travel. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Stentz's response to an obstacle in the response mechanism of '161 to detecting poor communications since stopping for an obstacle on the ground is a

safety response and applying a known technique to improve the safety of a mobile device is an improvement on the device.

Regarding **claim 24**, which is dependent on claim 19 wherein:

“the computer/transceiver system uses logged information of forward movement using at least one of dead reckoning, odometry, directional measurement, differential wheel rotation, or a combination thereof for backtracking;

the computer/transceiver system provides a slower speed than forward speed for backtracking by the surrogate;

the computer/transceiver uses waypoints back along a forward movement path for backtracking movement considering the slower speed of backtracking.” - ‘161 /Stentz disclose the invention except for using a slower speed when backtracking. It would have been obvious to one having ordinary skill in the art at the time of the invention to travel slower when maneuvering autonomously rather than under remote control because of the extra computation. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claims **26, 27 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over ‘161/Stentz as applied to claim 25 above, and further in view of U.S. Patent No. 5,799, 154 to Kuriyan (Kuriyan). Kuriyan is concerned with monitoring wireless packet networks.

Regarding **claim 26**, which is dependent on claim 25 wherein:

"the detecting comprises determining that a current non-zero data rate at which the surrogate is successfully transmitting data via the wireless communications is less than a desired data rate." – "161 and Stentz do not mention measuring the usable data rate. However, Kuriyan mentions in the abstract using data throughput as an indicator of degraded performance. It would have been obvious to one of ordinary skill in the art of communications at the time of the invention to incorporate Kuriyan's measurement technique in the radio wave measuring circuitry of '161 to improve the measurement techniques by detecting degradation in another way.

Regarding **claim 27**, which is dependent on claim 26 further comprising:

"prior to the detecting, wirelessly transmitting a video signal at or above the desired rate from the surrogate to the user." –'161 does not discuss the details of video transmission as part of its robot. However, Stentz uses a robot that runs autonomously and/or under remote control that sends video back to the remote operator interface as shown in Fig. 4. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the video technique of Stentz to the known device of '161 which was ready fro further improvement to yield predictable results of a remote/autonomous robot that communicated both by video and radio.

Regarding **claim 29**, which is dependent on claim 25 wherein the detecting comprises determining that a current transmission delay associated with packets

received by the surrogate is greater than an acceptable transmission delay. “161 and Stentz do not mention measuring the transmission delay. However, Kuriyan mentions in the abstract using service availability as an indicator of degraded performance. It would have been obvious to one of ordinary skill in the art of communications at the time of the invention to incorporate Kuriyan’s measurement technique in the radio wave measuring circuitry of '161 to improve the measurement techniques by detecting degradation in another way.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIN B. OLSEN whose telephone number is (571)272-9754. The examiner can normally be reached on Mon - Fri, 8:30 -5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lin B Olsen/
Examiner, Art Unit 3661

/Thomas G. Black/

Supervisory Patent Examiner, Art Unit 3661